

On the taxonomic status of *Murex trigonulus* Lamarck, 1816, *Murex trigonulus* Lamarck, 1822 and related taxa (Gastropoda, Muricidae).

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KEYWORDS : Gastropoda, Muricidae, *Murex trigonulus*, taxonomy.

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ABSTRACT : After examination of the type material and careful study of other material, literature and notes, the authors conclude that *Murex trigonulus* Lamarck, 1816 and *Murex triqueter* Born, 1778 are synonyms and that *Murex cumingii* A. Adams, 1853 is the oldest available junior synonym for *Murex trigonulus* Lamarck, 1822, preoccupied. A lectotype is designated for *Murex trigonulus* Lamarck, 1822.

An historical review and the synonymies are also given for other related species discussed herein, including *Chicoreus fosteri* (D'Attilio & Hertz, 1987) and *Chicoreus consuela* (Verrill, 1950) (new name for *Murex pulcher* A. Adams, 1853), both several times misidentified as *Murex trigonulus* Lamarck.

RÉSUMÉ : Après une étude approfondie du matériel-type, de matériel de différentes origines, de la littérature et de notes diverses, les auteurs placent en synonymie *Murex triqueter* Born, 1778 et *Murex trigonulus* Lamarck, 1816 et adoptent *Murex cumingii* A. Adams, 1853 comme synonyme plus récent disponible pour *Murex trigonulus* Lamarck, 1822, préoccupé. Un lectotype est désigné pour *Murex trigonulus* Lamarck, 1822. L'historique et la synonymie sont également donnés pour d'autres espèces apparentées, parmi lesquelles *Chicoreus fosteri* (D'Attilio & Hertz, 1987) et *Chicoreus consuela* (Verrill, 1950) (nouveau nom pour *Murex pulcher* A. Adams, 1853), toutes deux maintes fois confondues avec *Murex trigonulus* Lamarck.

INTRODUCTION

The problem of the identity of *Murex trigonulus* Lamarck, 1816, and of *Murex trigonulus* Lamarck, 1822 has been with us for a long time.

Not only were two distinct species given this same name by Lamarck himself, but other species as well have been figured or cited as *Murex trigonulus* by various authors. The identity of *Murex trigonulus* has been recently discussed by several authors (CERNOHORSKY, 1967 and 1971; VOKES, 1968 and 1974;

HOUART, 1985). CERNOHORSKY (1971) figured what he thought was one of the remaining syntypes of *Murex trigonulus* Lamarck, 1816, but he did not designate a lectotype. In the meantime, the identity of *Murex trigonulus* Lamarck, 1822, remained uncertain. New elements from the collections of the Museum of Natural History in Geneva, Switzerland, permit us to review the problem.

Abbreviations for the museum collections mentioned in the text are :

BMNH, British Museum of Natural History, London;

MHNG, Muséum d'Histoire naturelle de Genève, Switzerland;

NHMW, Naturhistorisches Museum Wien, Austria.

HISTORICAL RECAPITULATION

1. In 1816, LAMARCK published the illustrations of the "Encyclopédie Méthodique", together with a list of names (known as "La Liste").

In this list, he figured and cited two species that are a part of the problem. One of these species (pl. 417, fig. 1) is cited as "*Murex triqueter* Born", and the other is named *Murex trigonulus* (pl. 417, fig. 4). The species cited as "*Murex triqueter*" is actually a specimen of the Caribbean *Chicoreus (Siratus) consuela* (Verrill, 1950), better known by the preoccupied name *Murex pulcher* A. Adams, 1853 (VOKES, 1968, 1974 and HOUART, 1985). On the other hand, the illustration of what LAMARCK named *Murex trigonulus* in 1816 is somewhat ambiguous.

2. In 1822, in his "Animaux sans vertèbres", LAMARCK decided that he was in error in the illustration of the "Encyclopédie Méthodique" and placed the 1816 figure of his *Murex trigonulus* in synonymy with *Murex triqueter* Born, changing the other species (i.e., the one that he had originally called *triqueter*) to a "variety b" of *M. triqueter* (LAMARCK, 1822, sp. n° 31).

3. Having placed in 1822 his *M. trigonulus* of 1816 in synonymy with *M. triqueter*, LAMARCK then considered that the name *Murex trigonulus* was no longer being used, and was therefore available again. He reused it for another species (LAMARCK, 1822, sp. n° 32). Unfortunately, *Murex trigonulus* Lamarck, 1822, was not figured, even by DELESSERT (1841). LAMARCK gave no reference to any published figure either, so that the identity of this species is questionable.

4. For some unknown reason, KIENER (1843) chose to keep the 1816 designations and ignored the

1822 LAMARCK's corrections. KIENER (1843) thus cites and figures:

a) pl. 25, fig. 2: "*Murex trigonulus* Lam.", for what is a specimen of *Murex triqueter* Born, 1778. Indeed, the figure of KIENER is much more accurate than LAMARCK's illustrations of the "Encyclopédie Méthodique".

b) pl. 40, fig. 3: "*Murex triqueter* Born", representing a typical Caribbean *Chicoreus consuela* (Verrill).

LAMARCK actually never called this shell *Murex trigonulus* but several subsequent authors figured *Chicoreus consuela* under the name "*Murex trigonulus* Lamarck": first of all REEVE (1845), then DUNKER (1864), TAPPARONE-CANEFRI (1875), KUSTER & KOBELT in MARTINI & CHEMNITZ (1878) and TRYON (1880). SCHRAMM (1869) probably also referred to *C. consuela* when he mentioned "*M. trigonulus* Lamarck" in his "Catalogue des Mollusques de la Guadeloupe", consequently assigning the Caribbean locality to the species.

5. a) Another species sometimes called "*Murex trigonulus*" was first figured by SOWERBY (1841: pl. 195, fig. 102, sp. 48) as *M. trigonulus* Lamarck, with the locality "Persian Gulph".

b) The same species was also figured and reported as *Murex trigonulus* Lamarck by SOWERBY (1879: pl. 391, fig. 120, sp. 40), with the locality "Red Sea".

c) VOKES (1968) has discussed the identity of the species figured by SOWERBY and she then concluded that it is the one subsequently named *Pterynotus annandalei* by PRESTON (1910). She also thought that this form might probably be the *Murex trigonulus* of Lamarck, 1822, not 1816.

Finally, it turned out to differ from *annandalei* and was named *Naquetia fosteri* D'Attilio & Hertz, 1987. It is known from the Gulf of Akaba, off Eilat, Red Sea. We will see further herein that the hypothesis of *N. fosteri* as being the same as *M. trigonulus* Lamarck, 1822 also has to be rejected.

d) Because of the confusion between *annandalei* and *fosteri*, and because *Pterynotus annandalei* is considered by some authors to be a junior synonym of *Murex barclayi* Reeve, 1858, it has been thought for a while (cf. HOUART, 1985) that *Murex barclayi* Reeve, and *Murex trigonulus* Lamarck, 1822, were synonyms.

e) Other authors have also cited or figured *Naquetia fosteri* as "*Murex trigonulus* Lamarck":

DUNKER (1864 : pl. 22, figs. 3, 4), TAPPARONE-CANEFRI (1875 : 573), POIRIER (1883 : sp. n° 101, referring to the figures of SOWERBY) and SMITH (1953 : pl. 8, figs. 8, 12).

6. a) In her paper on the identity of *Murex triqueter* Born, VOKES (1974) designated as lectotype of this species the figure of MARTINI (in MARTINI & CHEMNITZ, 1777, v. 3, fig. 1038) that BORN utilized as reference when he listed without illustration his new species in 1778.

b) The species illustrated by BORN two years later (1780 : pl. 11, figs. 1-2) was reported under the same name *Murex triqueter*, but it is another species, referable to *Chicoreus cumingii* (A. Adams, 1853). The syntype figured by BORN in 1780 is now at the Naturhistorisches Museum, Wien (n° NHMW 76.566) and has been illustrated by VOKES (1974), who synonymised it with *Murex trigonulus* Lamarck, 1816. This assumption was based upon "Cernohorsky's figuring of the specimen in the Museum d'Histoire Naturelle, Geneva, n° 1099/35, as the **only extant syntype** and presumably, therefore, **lectotype of the species**".

However, it has to be noted that CERNOHORSKY never designated this specimen as lectotype of *Murex trigonulus* Lamarck, 1816.

c) In other respects, the distinction made by VOKES (1974) between the two species, and her designation of MARTINI's figure of 1777 as the lectotype of the true *M. triqueter* Born, 1778, have the effect of rectifying CERNOHORSKY's opinion "that both *M. trigonulus* Lamarck and *M. cumingii* A. Adams are conspecific with *M. triqueter* Born".

DATA FROM THE COLLECTIONS OF THE M.H.N.G.

Despite the conclusions made by the most recent authors (CERNOHORSKY, 1971; VOKES, 1968 & 1974; HOUART, 1985), we think that the identity of both *Murex trigonulus* Lamarck, 1816 and 1822, remained uncertain and has to be reexamined very carefully.

1° Annotations in LAMARCK's "Hist. nat. An. s. vert." : number of specimens.

The volumes of the "Histoire naturelle des Animaux sans vertèbres" (1822) kept with the Lamarck Collection in the Muséum d'Histoire Naturelle, Geneva, contain handwritten annotations by LAMARCK's daughter, Rosalie de LAMARCK, mentioning the number of specimens originally present in her father's collection. Indeed, these volumes were also considered at that time as an inventory catalogue of the Lamarck collection.

From these annotations, we may conclude that were present :

a) **1 specimen only** of "*M. triqueter*, espèce principale" (sp. n° 31, p. 166, main species) = *M. trigonulus* Lamarck, 1816, Encycl. Méthod., pl. 417, fig. 4 a-b. Length: "21 lignes et demie" (= approx. 47.5 mm) (specimen not in the MHNG)

b) **2 specimens** of "*M. triqueter*, var. b" (sp. n° 31, var. b, p. 166), figured as "*M. triqueter* Born" by Lamarck in the Encycl. Méthod., pl. 417, fig. 1 a-b (= *C. consueta* (Verrill)). Length: "18 lignes et demie" (= approx. 41.7 mm) (MHNG n° 1152/41)

c) **2 specimens** of *M. trigonulus* Lamarck, 1822 (sp. n° 32, p. 167) (no figure nor reference to any previous illustration). Length: "18 lignes" (= approx. 40.6 mm) (MHNG n° 1099/35)

As we have seen above, CERNOHORSKY (1971 : 189, fig. 3) indicates for *M. trigonulus* Lamarck, 1816 : "The remaining syntype of *Murex trigonulus* Lamarck (there were originally 2 specimens in the collection according to R. de Lamarck) is in the Muséum d'Histoire naturelle, Geneva, n° 1099/35 and measures 37.4 mm in length (Figure 3)."

This statement is in contradiction with the indications of Rosalie de Lamarck (see above a), mentioning that there was **only 1 specimen** of the species n° 31 in the Lamarck Collection. CERNOHORSKY probably confused species n° 31 (= *M. trigonulus* Lk., 1816) with the *M. trigonulus* Lk., 1822 (sp. n° 32), for which there were indeed originally 2 specimens.

Furthermore, we will see that the lot n° 1099/35 in the collection of the MHNG actually contains 2 specimens, and not only one (see further herein).

2° Correspondence between Dr. Binder and Dr. Emerson (1962).

VOKES (1974 : 260) reports some of the correspondence exchanged between Dr. William K. Emerson, American Museum of Natural History, New York, and Dr. E. Binder, of the Muséum d'Histoire naturelle, Geneva. We think that it would be useful to review the information sent to Dr. Emerson by Dr. Binder.

a) October 26, 1962, *in litt.* :

"I send you two photographs of the possible type of Lamarck's *Murex trigonulus*. It was in Lamarck's collection labeled "*M. triqueter* Born var.", but this may be a "rectification" by a subsequent curator. I think it is the specimen figured in the Encyclopédie méthodique Pl. 417, fig. 4 a & b. Its length is 38 mm! Lamarck indicates 18 lignes = 40 1/2 mm".

b) November 14, 1962, *in litt.* :

"If there had been any specimen in Lamarck's collection clearly labeled "*Murex trigonulus*", I would have had no trouble in finding out which was the type. But there are no specimens so labeled.

Since Lamarck considered all his specimens figured in Encyclopédie Pl. 417 fig. 1 a & b and fig. 4 a & b as one and the same species, and they are certainly not *M. triqueter* Born, he must have made an error somewhere. It seems logical to think that these specimens might possibly be what Lamarck had first called *M. trigonulus*, and that by a later mistake he has attributed them to *M. triqueter*. This suspicion is reinforced by the fact that Kiener, who worked on Lamarck's collection, inverted both species.

I think this is the most likely definition one can give of *M. trigonulus*, but of course you do not have to adopt it."

3° MHNG lot n° 1099/35
(as yet considered by authors to be *Murex trigonulus* Lamarck, 1816).

This lot is evoked in the letter of October 26, 1962 sent by Dr. Binder to Dr. Emerson.

It contains the specimen figured by CERNOHORSKY (1971: fig. 3) as the only "remaining syntype" of *M. trigonulus* Lamarck, 1816.

a) Concerning the information given by Dr. Binder, some comments seem to be necessary :

- In reality, the old label that accompanies the specimen initially beared the indication "*Murex triqueter*, Born - *M. trigonulus*, Enc. méth." and later on, probably in 1941, G. Mermod, former curator at the Muséum d'Histoire naturelle, Geneva, made a rectification, striking out "*triqueter* Born", underlining "*trigonulus*" and adding "var., Lk."

This label is not an original label, though it is a quite old one, probably made around 1895 by De Palezieux or Lunel when Dr. Brot was curator. It bears the letter "L.", attesting that the specimen came from the Lamarck collection.

- Dr. Binder writes "Its length is 38 mm. Lamarck indicates 18 lignes = 40 1/2 mm".

Actually, "18 lignes" concerns Lamarck's species n° 32 (i.e. *M. trigonulus* Lamarck, 1822, not 1816) and not the n° 31, figured at the fig. 4 a & b of the Encyclopédie Méthodique (i.e. *M. trigonulus* Lamarck, 1816), for which Lamarck indicates **21 lignes et demie** (= 47.5 mm). The confusion is the same as the one made later by CERNOHORSKY (1971).

- Dr. Binder mentions only 1 specimen of 38 mm from Lamarck's collection. But the actual box containing the lot n° 1099/35 in the Lamarck collection contains **two** glass tubes, each with one specimen, so that the lot 1099/35 actually contains **two specimens**, obviously of the same species, one of 37.4 mm and one of 39 mm. The box also contains the old label mentioned above. This label, now loose, originally was glued on a small rectangular wooden or cardboard plate, with the specimens themselves glued on it. There are two separate traces on the label; it means that there were 2 specimens originally glued.

The two specimens of the lot 1099/35 are in separate tubes, but were not characterized by any specific number. The specimen of 37.4 mm is now registered as the 1099/35/1 and the one of 39 mm as the 1099/35/2. These two specimens are figured here at Figs. 1 and 2.

The specimen of 37.4 mm is most likely the one mentioned by Dr. Binder in his letter as measuring 38 mm.

But we do not think that the specimen 1099/35/1 or any of the 2 specimens of the lot 1099/35 is the one figured by LAMARCK (1816: pl. 417, fig. 4) as *Murex trigonulus*.

b) Concerning the specimen 1099/35/2, was it present or not when Dr. Binder wrote to Dr. Emerson and when Cernohorsky examined the collection in the Muséum of Geneva? We are unable to answer this question. The only fact is that Dr. Binder drafted an index card, now appended to the manuscript index card file previously prepared by Mermod for the Lamarck collection. On this card, Dr. Binder indicates the presence of **two** specimens, one of 38 mm (approximation for 37.4) and one of 39 mm.

The tube with specimen n° 1099/35/2 contains two small pieces of paper with handwritten annotations :

- On one of these pieces of paper we find "*M. triqueter* var.". The handwriting is most likely Lamarck's handwriting, but it also resembles the handwriting of his daughter Rosalie. This original label may have been misplaced.

- The other piece of paper bears a strange annotation written by Mermod : "*Murex triqueter* Born (*M. trigonulus* Encycl. pl. 417, f. 1 a-b = *triqueter* var. Lamk.) - Oc. Indien.". It is possible that Mermod, taking his inspiration from the label of Lamarck "*M. triqueter* var.", wished to complete the indications with the data from "Hist. nat. An. s. vert." and concluded wrongly that the form concerned was the variety b of *M. triqueter* (An. s. vert., p. 166), and thus was the one illustrated at fig. 1 a-b of the Encyclopédie méthodique, i.e. the species *Chicoreus consuela*, without checking the figure in question.

c) The loose "old label" made when Brot was curator and now accompanying the lot 1099/35 bears the number 31, but the box in which the tubes containing the two specimens are placed has another label glued on it, more recent, and probably made by Mermod. This more recent label indicates "*Murex trigonulus* Lk." and bears the number "N° 32", written in large red type. It would mean that the two specimens of the lot n° 1099/35 are *Murex trigonulus* Lamarck, 1822 (Hist. nat. An. s. vert., sp. no 32, p. 167). We consider this is the most likely hypothesis.

d) It is also interesting to look at the card referring to the lot 1099/35, from the handwritten index card file made by Mermod for the Lamarck collection.

He first drew up the card in conformity with the loose "old label" accompanying the lot and wrote : "*Murex triqueter* Born var."; behind "var.", he pencilled "B"; he also indicated "Coll. Lamarck, Type"

and "1 ex. de 38 mm, n° 31", without mentioning the second specimen.

Then he also added :

- "Lk. An. s. vert., vol. 7 p. 166" (which is in agreement with the n° 31).

- "*Murex triqueter* Born var. B, Encycl. pl. 417 fig. 1 a-b" (which is not in agreement with the specimen).

- "étiquette manuscrite de Lamarck au verso" (mentioning the small piece of paper with Lamarck's handwriting "*M. triqueter* var.", mentioned above and now accompanying the specimen 1099/35/2).

But on the same index card, Mermod also made the following comment :

"Il est douteux, malgré l'étiquette manuscrite de Lk. au verso, qu'il s'agisse bien du *triqueter* var. au sens de Lk. Je crois plutôt qu'il s'agit du *trigonulus* Lk. typique avec sa forme plus allongée et ses côtes tranchantes" (signed "G.M. 1941").

This short description matches that of *Murex trigonulus* Lamarck, 1822 (species n° 32), so that despite the confusion of names and the probable mix-up of labels, Mermod apparently noticed already that the lot 1099/35 was referable to *M. trigonulus* Lamarck, 1822 (i.e. the species no 32 of An. s. vert.).

4° MHNG lot n° 1152/41

(*Chicoreus consuela* (Verrill); = *Murex trigonulus* of Reeve, not Lamarck; = *Murex triqueter* Born of Lamarck, 1816 and of Kiener, not of Born, 1778).

The lot n° 1152/41 in the MHNG actually contains **two specimens**, one measuring 40.5 mm. and the other one measuring 47.2 mm. The specimen of 40.5 mm is now registered as the 1152/41/1 and the one of 47.2 mm as the 1152/41/2. These two specimens are figured in Figs. 7 and 8. Both are *Chicoreus consuela* (Verrill), i.e. *Murex trigonulus* of Reeve (1845).

The two specimens were glued on a label, glued itself on a small rectangular cardboard plate; this label indicates : "*Murex trigonulus*, Lam. (*M. triqueter* Kiener)", and as locality : "Oc. Indien"; it was made nearly contemporaneously with the "old label", now loose, accompanying the lot 1099/35 (see above). There is no letter "L." (or "D".) on the label that would certify that the specimens would come from the Lamarck (or the Delessert) collection. We retrieved the specimens in the general systematic

collection, and not in the Lamarck collection, which is housed separately. However, Mermod made a card for this lot, that he inserted in his manuscript index card file of the Lamarck collection; on this card, he mentioned that the specimens possibly could come from the Lamarck or from the Delessert collection.

The figures of KIENER (1843, pl. 40, fig. 3) and LAMARCK (1816 : pl. 417, fig. 1 a-b, herein Fig. 15), both with "*Murex triqueter* Born" as legend, illustrate this same species : *Chicoreus consueta* (Verrill). But it is not proved that both authors figured the very same specimen.

The specimens 1152/41 bear a strong resemblance to KIENER's excellent figure, if one notices the following peculiarity : KIENER seemed to be in the occasional habit of drawing a composite figure when he illustrated a species. We already had noticed this peculiarity for other species, but the fact is obvious for the fig. 3 (pl. 40), which represents an imaginary specimen, intermediate between the 1152/41/1 and the 1152/41/2. For example, the apertural view of the fig. 3 exactly shows the two marginal spines on the right outer part of the siphonal canal of specimen 1152/41/1, whereas the general shape of the extremity of the siphonal canal, especially on the left side, refers to specimen 1152/41/2; the corrugations and the general sculpture copy the specimen 1152/41/1 rather than the 1152/41/2, but inversely with regard to the colouring. Moreover, the specimen 1152/41/1 measures 40.5 mm, and the 1152/41/2, 47.2 mm. KIENER indicates 44 mm, almost exactly the arithmetic mean between 40.5 and 47.2 mm !

On the other hand, the two original specimens of the Lamarck collection mentioned by Rosalie de Lamarck, of which one was utilized for the illustration of the Encyclopédie Méthodique, might be other specimens, that would seem to have disappeared from the collections of the MHNG.

The identity of the "*Murex triqueter* Born" of Lamarck and of Kiener, which is also the *Murex trigonulus* of Reeve and other authors, not of Lamarck, is thus clearly established : it is the Caribbean *Chicoreus consueta* (Verrill, 1950), new name for *Murex pulcher* A. Adams.

The locality "Oc. Indien" mentioned by LAMARCK (1822) and by KIENER, and given by the label of the lot MHNG no 1152/41, is an error, just as the locality "Red Sea" mentioned by REEVE and other authors.

5° MHNG lot n° 987.102
(*Chicoreus triqueter* (Born, 1778)).

Another interesting lot from the collection of Delessert was found in the general systematic collection of the Muséum d'Histoire naturelle of Geneva. This lot contains two specimens of the true *Chicoreus triqueter* (of Born, 1778), with the MHNG reg. numbers 987.102/1 and 2. The label indicates "*Murex triqueter* Born (*M. trigonulus*, Enc. méth.)" and mentions the locality "Océan Indien". These specimens are illustrated at Figs. 4 and 5.

The specimen 987.102/1 is the one figured by KIENER (1843 : pl. 25, fig. 2) as "*Murex trigonulus* Lam.". It is also interesting to note that the illustration of KIENER reproduces some details of the colour of the specimen n° 987.102/2, but there is no doubt that the sculpture (especially the corrugations and spiral cords on the dorsal view) on KIENER's figure matches the specimen n° 987.102/1.

The specimen 987.102/1 measures 64.4 mm in length and KIENER indicates 65 mm; the specimen 987.102/2 measures 62 mm.

The locality given by the label ("Oc. indien") however is not the one mentioned by KIENER ("Golfe Persique").

No other specimen of *Chicoreus triqueter* Born has been retrieved in the collections of the MHNG that may have been used for description by LAMARCK.

CONCLUSIONS - SYNONYMIES OF THE SPECIES

1° *Murex trigonulus* Lamarck, 1822.
(MHNG n° 1099/35/1 and 2)

The most likely hypothesis is that the specimens 1099/35/1 and 2 are the two syntypes of what Lamarck called *Murex trigonulus* in 1822 (see Figs. 1 and 2).

Indeed, Rosalie de Lamarck notes the presence of 2 specimens of this species in the collection of her father.

Moreover, the 2 specimens of the lot n° 1099/35 fit LAMARCK's short description (1822, p. 167, sp. n° 32) : "coquille plus étroite que la précédente (n° 31),

et qui en est bien distincte d'ailleurs par ses bourrelets subanguleux".

The size of the specimens (respectively 37.4 and 39 mm for 1099/35/1 and 2) matches LAMARCK's indications, as he noted 18 lignes (= 40.7 mm); the dimensions given in lignes by Lamarck were not always strictly accurate, but the size of the specimens fits much better the species n° 32 than the n° 31 (main species), for which Lamarck indicated 21 lignes et demie = 47.5 mm, and for which his daughter noted the presence of only 1 specimen in the collection.

The actual box containing the 2 specimens 1099/35 bears very explicitly the number "32", referring to *M. trigonulus* Lamarck, 1822.

The only problem is the loose old label that however is not the original label, bearing the number 31; but this is probably due to a previous mix-up between labels and specimens.

The specimen n° MHNG 1099/35/1 (Fig. 1) is here selected lectotype of *Murex trigonulus* Lamarck, 1822 (not Lamarck, 1816) and the specimen n° MHNG 1099/35/2 (Fig. 2) is the paralectotype.

The two specimens 1099/35 and *Murex cumingii* A. Adams, 1853 are the same species. The lectotype of *Murex cumingii* A. Adams, designated by CERNOHORSKY (1971) (BMNH n° 1963817), is illustrated at Fig. 3. In this case, *Chicoreus cumingii* (A. Adams, 1853) is a synonym, and is also the oldest available valid name to replace the preoccupied *Murex trigonulus* Lamarck, 1822.

In 1780, Born figured the very same species as his *Murex triqueter* (Type in Naturhistorisches Museum, Wien, n° 76566 - cf. VOKES, 1974). It is not however the *Murex triqueter* described by Born in 1778, referring to the figure of MARTINI. The latter is the true *M. triqueter* because of VOKES (1974) designation of the figure of MARTINI as lectotype. The earlier name *Murex triqueter* Born thus cannot be used for the *M. trigonulus* of Lamarck, 1822

SYNONYMY OF THE SPECIES

Chicoreus (Naquetia) cumingii

(A. Adams, 1853)

(Figs. 1 to 3)

1780 *Murex triqueter* Born. Test. mus. Caes. Vindob. : 291, pl. 11, figs. 1-2. (non *M. triqueter* Born, 1778).

1822 *Murex trigonulus* Lamarck. Hist. nat. An. s. vert. 7 : 167 (sp. n° 32). (non *M. trigonulus* Lamarck, 1816).

1853 *Murex cumingii* A. Adams. Proc. Zool. Soc. Lond. (for 1851) 19 : 270.

1879 *Murex triqueter* var. *cumingii* A. Adams : SOWERBY, Thes. Conch. 4 (*Murex*) : 10, pl. 391, fig. 115.

1907 ? *Murex triqueter* var. *amanuensis* Couturier. Jour. de Conchyl. 55 : 142.

1961 *Naquetia triqueter* (Born) : HABE, Coloured Illustr. of the Shells of the Western Pacific in Colour 2 : 80, pl. 25, fig. 13.

1964 *Naquetia trigonalis* (sic) (Lamarck) : HABE, Shells of the Western Pacific in Colour 2 : 80, pl. 25, fig. 13 (same fig. as HABE, 1961).

1967 *Pterynotus (Naquetia) triqueter* (Born, 1778) : CERNOHORSKY, Veliger 10 (2) : 124; pl. 15, fig. 15, text. fig. 6.

1967 *Pterynotus triqueter* (Born, 1778) : CERNOHORSKY, Marine Shells of the Pacific : 126, pl. 26, fig. 160, text. fig. 13.

1968 *Pterynotus (Naquetia) triqueter* (Born) : VOKES, Journ. Conch. 26 (5) : 302, pl. 13, figs. 3-4.

1970 *Pterynotus (Naquetia) amanuensis* (Couturier) : VOKES, Veliger 13 (2) : 184.

1971 *Murex trigonulus* Lamarck, 1816 : CERNOHORSKY, Veliger 14 (2) : 189, fig. 3 (figured as syntype of *M. trigonulus* Lamarck, 1816).

1971 *Murex cumingii* A. Adams : CERNOHORSKY, Veliger 14 (2) : 189, fig. 4 (designation of lectotype).

1974 *Chicoreus (Naquetia) trigonulus* (Lamarck, 1816) : VOKES, Veliger 16 (3) : 260, 263, figs. 1, 3 and 5.

1976 *Chicoreus (Naquetia) trigonulus* (Lamarck, 1816) : FAIR, The Murex Book : 83, pl. 14, fig. 179.

1976 *Naquetia trigonula* (Lamarck, 1816) : RADWIN & D'ATTILIO, Murex Shells of the World : 81, pl. 15, fig. 12.

1978 *Chicoreus (Naquetia) trigonulus* (Lamarck, 1816) : VOKES, Ann. Natal Mus. 23 (2) : pl. 5, fig. 5.

1985 *Chicoreus (Naquetia) trigonulus* (Lamarck, 1816) : HOUART, Xenophora 29 : 11, figs. 11 to 13.

1987 *Naquetia trigonula* (Lamarck, 1816) : D'ATTILIO & HERTZ, Veliger 30 (2) : 194, figs. 10-13.

2° *Murex trigonulus* Lamarck, 1816.

After CERNOHORSKY (1971) published an illustration of the MHNG specimen n° 1099/35/1 as the "remaining syntype" of *Murex trigonulus* Lamarck, 1816, other authors (VOKES, 1974 ; HOUART, 1985) followed him and got confused in the same way.

But we have seen that it seems impossible for either of the two specimens of the lot 1099/35 to be the type of *M. trigonulus* Lamarck, 1816.

Fortunately, CERNOHORSKY did not designate the specimen 1099/35/1 as lectotype of *M. trigonulus* Lamarck, 1816.

The problem was to find out the real identity of *M. trigonulus* Lamarck, 1816. Referring to his figure 4 a-b of the "Encycl. Méthodique", LAMARCK (1822 : p. 166) mentioned a size of 21 lignes 1/2 (= 47.5 mm) for the specimen, and Rosalie de Lamarck noted that this specimen was unique. Unfortunately, this specimen cannot be located in the Lamarck collection or in the general systematic collection of the Muséum d'Histoire Naturelle in Geneva. It is not located in the collection of the Muséum National d'Histoire Naturelle in Paris either. The illustration of the Encycl. Méthod. (pl. 417, fig. 4 a-b) is unfortunately somewhat inaccurate and ambiguous (see Fig. 13 herein).

However, looking carefully at LAMARCK's illustration, we conclude that the specimen figured most probably was a *Chicoreus triqueter* Born, 1778, for which VOKES (1974) designated the figure of MARTINI as lectotype (see Fig. 14 herein).

Indeed, the figure of the Encycl. Méthod. suggests a sculpture resembling the one of *C. triqueter* Born, with spiral cords more numerous and more closely spaced than those of *M. cumingii* A. Adams (= *M. trigonulus* Lamarck, 1822); the squamose aspect of the cords of *C. triqueter* however is not apparent on the figure. Like *C. triqueter* Born, LAMARCK's figure does not bear any fold along the leading edge of the varices; on the contrary, *Murex cumingii* A. Adams and the MHNG specimens of the lot n° 1099/35 present such a fold materializing an interruption of growth on the leading edge of the varices (though not on the trailing edge of the same ribs). Also, the varices on LAMARCK's figure are broad and rounded like those of *C. triqueter*, whereas those of *M. cumingii* A. Adams and of the specimens MHNG 1099/35 are much narrower and subangular,

even lamellar and terminating as a compressed fringe near the basis of the body whorl.

At Figs. 9, 10, 11 and 12, we figure several specimens of *Chicoreus triqueter* (Born, 1778) from the general collection of the MHNG and from the Houart collection; the resemblance of some of these shells with LAMARCK's illustration of the Encyclopédie Méthodique is quite apparent; it is better emphasized by these specimens than by the specimen MHNG n° 987.102/1 or 2 illustrated by KIENER (1843 : pl. 25, fig. 2) (herein Figs. 4 and 5, see above). If *Murex trigonulus* Lamarck, 1816 is a synonym of *Murex triqueter* Born, 1778, the valid name is of course *M. triqueter* Born, and it is not essential to designate a neotype (as the original type cannot be located) for *M. trigonulus* Lamarck, 1816.

There is another species, originally described from the Philippines, that likely enters the synonymy of *M. triqueter* Born, 1778, and *M. trigonulus* Lamarck, 1816. It is *Murex roseotinctus* Sowerby, 1860. SOWERBY (1860 : 429, pl. 49, fig. 6) described it as "resembling *M. trigonulus* but wanting the expanded fringe at the lower part of the fronds of that species". The holotype (BMNH reg. n° 1974100) is a young and somewhat eroded specimen (see Fig. 6) extremely similar to young individuals of *Chicoreus triqueter* Born, 1778, and also resembling LAMARCK's figure 4 of the Encycl. Méthod.

SYNONYMY OF THE SPECIES

Chicoreus (Naquetia) triqueter (Born, 1778)
(Figs. 4 to 6 and 9 to 14)

1777 *Purpura subalata, triquetra, variegata*. MARTINI, Neues Syst. Conchylien-Cab. 3 : 351, pl. 111, fig. 1038.

1778 *Murex triqueter* Born. Index Mus. Caes. Vindob. : 288.

1798 *Purpura cancellata* Röding. Museum Boltinianum. : 143.

1798 *Purpura variegata* Röding. Museum Boltinianum. : 143.

1811 *Tripflex flexuosa* Perry. Conchology, pl. 7, fig. 1.

1816 *Murex trigonulus* Lamarck. Tabl. Encycl. Méth. (Vers), pl. 417, fig. 4 a-b; Liste, p. 5.

1822 *Murex triqueter* Born : LAMARCK, Hist. nat. An. s. vert. 7 : 166 (sp. n° 31, main species).

1839-1868 *Murex triqueter* Born : KUSTER & KOBELT in MARTINI & CHEMNITZ, Syst. Conchylien-Cab. 3 (2) : 29 (1856); pl. 12, fig. 7 (copy of MARTINI, pl. 111, fig. 1038) (1839); pl. 20, fig. 4 (1868).

1843 *Murex trigonulus* Lamarck : KIENER, Spec. gén. Icon. Coq. viv. 7 : 119, pl. 25, fig. 2.

1845 *Murex triqueter* Born : REEVE, Conch. Icon. 3 (Murex) : pl. 1, fig. 4.

1860 *Murex roseotinctus* Sowerby. Proc. Zool. Soc. Lond. (for 1859) 27 : 429, pl. 49, fig. 6.

1879 *Murex roseotinctus* Sowerby : SOWERBY, Thes. Conch. 4 : 9, pl. 390, fig. 108.

1879 *Murex triqueter* Born : SOWERBY, Thes. Conch. 4 : 9, pl. 391, fig. 114.

1880 *Murex triqueter* Born and *Murex roseotinctus* Sowerby : TRYON, Man. Conch. 2 : 85, pl. 40, figs. 506 and 515.

1883 *Murex triqueter* Born and *Murex roseotinctus* Sowerby : POIRIER, Nouv. Archiv. Mus. Hist. nat. Paris (2e sér.) 5 : 67-68.

1966 *Naquetia triqueter* (Born, 1780) : HABE & KOSUGE, Shells of the World in Colour 2: Tropical Pacific : 56, pl. 20, fig. 15.

1974 *Chicoreus (Naquetia) triqueter* (Born, 1778) : VOKES, Veliger 16 (3) : 258-264, figs. 2 and 4 (designation of the fig. 1038 of Martini as lectotype).

1976 *Chicoreus (Naquetia) triqueter* (Born, 1778) : FAIR, The Murex Book : 83, pl. 14, fig. 177.

1976 *Naquetia triquetra* (Born, 1778) : RADWIN & D'ATTILIO, Murex Shells of the World: 82, pl. 15, fig. 11. (the specimen illustrated is most likely a *C. (N.) triqueter vokesae* Houart, 1986, from Zanzibar).

(1978) *Chicoreus (Naquetia) triqueter* (Born, 1778) : VOKES, Ann. Natal Mus. 23 (2) : 394, pl. 5, fig. 4 is *Chicoreus (N.) triqueter vokesae* Houart, 1986.

1985 *Chicoreus (Naquetia) triqueter* (Born, 1778) : HOUART, Xenophora 29 : 12, figs. 8 to 10.

3° *Pterynotus annandalei* (Preston, 1910) and *Murex barclayi* Reeve, 1858.

Actually, the species *annandalei* Preston is not referable to *Pterynotus* Swainson, 1833, but should be placed in the genus *Chicoreus* Montfort, subgenus *Naquetia* Jousseaume, 1880. Resembling somewhat *Chicoreus cumingii* (A. Adams, 1853), it is, however, distinct from this species and thus also

from *M. trigonulus* Lamarck, 1822; it cannot be included in its synonymy, though *M. trigonulus* Lamarck became identified by authors with *Pterynotus annandalei* when the latter was confused with *Chicoreus (Naquetia) fosteri* (D'Attilio & Hertz, 1987.)

Chicoreus barclayi (Reeve, 1858), sometimes considered as a senior synonym of *annandalei* Preston, also has to be excluded from the synonymy of *Murex trigonulus*; even if *Chicoreus barclayi* may be distinct from *C. annandalei* (D'ATTILIO & HERTZ, 1987a), it has nothing to do anyway with *Murex trigonulus* Lamarck, 1822.

SYNONYMY OF THE SPECIES *Chicoreus (Naquetia) annandalei* (Preston, 1910)

1858 ? *Murex barclayi* Reeve. Proc. Zool. Soc. London (for 1857) 25 : 209, pl. 38, fig. 2.

1910 *Pteronotus annandalei* Preston. Rec. Indian Mus. 5 : 118, fig. 3.

1968 *Pterynotus (Naquetia) annandalei* (Preston): Illustrated in VOKES, Journ. Conch. 26 (5) : 302, pl. 13, figs. 1-2.

1976 *Chicoreus (Naquetia) annandalei* (Preston) : FAIR, The Murex Book : 21, pl. 14, fig. 171.

1985 ? *Chicoreus (Naquetia) barclayi* (Reeve): HOUART, Xenophora 29 : 8.

1987a *Naquetia annandalei* (Preston) : D'ATTILIO & HERTZ, Festivus 19 (6) : 56, figs. 1-6, 11.

1987b *Naquetia annandalei* (Preston) : D'ATTILIO & HERTZ, Veliger 30 (2) : 192, figs. 7-9.

4° *Chicoreus (Naquetia) fosteri* (D'Attilio & Hertz, 1987).

Before its description by D'Attilio & Hertz in 1987 (D'ATTILIO & HERTZ, 1987b), this species was confused with *Pterynotus annandalei* Preston; it is the one figured by SOWERBY (1841 : fig. 102; 1879 : fig. 120) as *Murex trigonulus* Lamarck.

However, it is distinct from *Chicoreus cumingii* (A. Adams) and thus also from *Murex trigonulus* Lamarck, 1822.

SYNONYMY OF THE SPECIES

Chicoreus (Naquetia) fosteri
(D'Attilio & Hertz, 1987)

1841 *Murex trigonulus* Lamarck : SOWERBY, Conch. Illustr. (Murex) : p. 3, pl. 195, fig. 102.

1864 *Murex trigonulus* Lamarck, variety : DUNKER, Novit. Conch. : 65, pl. 22, figs. 3-4.

1875 *Murex trigonulus* Lamarck (partim : var. a and var. b) : TAPPARONE-CANEFRI, Annali mus. civ. Stor. nat. Genova : 573.

1879 *Murex trigonulus* Lamarck : SOWERBY, Thes. Conch. 4 (Murex) : pl. 391, fig. 120.

1883 *Murex trigonulus* Lamarck (partim) : POIRIER, Nouv. Archiv. Mus. Hist. nat. Paris (2e sér.) 5 : 68.

1953 *Murex trigonulus* Lamarck : SMITH, Illustr. catal. rec. spec. Rock shells : 4, pl. 8, figs. 8, 12 (after SOWERBY, 1841, pl. 195, fig. 102).

1976 *Naquetia annandalei* (Preston) : RADWIN & D'ATTILIO, Murex Shells of the World : 80, pl. 15, figs. 9-10.

1987 *Naquetia fosteri* D'Attilio & Hertz. Veliger 30 (2) : 190, figs. 1-6.

5° *Murex trigonulus* of Reeve,
not of Lamarck.

SYNONYMY OF THE SPECIES

Chicoreus (Siratus) consuela (Verrill, 1950)
(Figs. 7-8 and 15)

1816 *Murex triqueter* Born : LAMARCK, Tabl. Encycl. Méth. (Vers), pl. 417, fig. 1 a-b; Liste, p. 5. (not *M. triqueter* of Born, 1778).

1822 *Murex triqueter* Born, variety b : LAMARCK, Hist. nat. An. s. vert. : 166 (sp. n° 31, var. b).

1843 *Murex triqueter* Born : KIENER, Spec. gén. Icon. Coq. viv. 7 : 120, pl. 40, fig. 3.

1845 *Murex trigonulus* Lamarck : REEVE, Conch. Icon. 3 (Murex) : pl. 22, fig. 87.

1853 *Murex pulcher* A. Adams. Proc. Zool. Soc. Lond. (for 1851) 19 : 270. (non *Murex pulcher* J. Sowerby, 1813, nec *M. pulcher* DeFrance, 1827).

1869 *Murex trigonulus* Lamarck : SCHRAMM, Cat. Moll. Guadeloupe : 2.

1870 *Murex trigonulus* Lamarck : KUSTER & KOBELT in MARTINI & CHEMNITZ, Syst. Conchylien-Cab. 3 (2) : 121, pl. 36, fig. 9.

1875 *Murex trigonulus* Lamarck (partim) : TAPPARONE-CANEFRI, Annali mus. civ. Stor. nat. Genova : 573.

1879 *Murex pulcher* A. Adams : SOWERBY, Thes. Conch. 4 (Murex) : 10, pl. 391, fig. 119.

1880 *Murex trigonulus* Lamarck : TRYON, Man. Conch. 2 : 84, pl. 11, fig. 120.

1883 *Murex trigonulus* Lamarck (partim) : POIRIER, Nouv. Archiv. Mus. Hist. nat. Paris (2e sér.) 5 : 68.

1883 *Murex pulcher* A. Adams : POIRIER, Nouv. Archiv. Mus. Hist. nat. Paris (2e sér.) 5 : 68.

1950 *Murex pulcher consuela* Verrill. Minut. conch. Club South. Calif. (101) : 7, fig. 6.

1963 *Murex consuelae* Verrill emend. VOKES, Tulane Stud. Geol. 1 (3) : 111.

1965 *Chicoreus (Siratus) consuelae* (Verrill) : VOKES, Tulane Stud. Geol. 3 (4) : 195.

1968 *Chicoreus (Siratus) consuelae* (Verrill) : VOKES, Journ. Conch. 26 (5) : 303, pl. 13, figs. 5-6.

1976 *Chicoreus (Siratus) consuela* (Verrill) : FAIR, The Murex Book : 33, pl. 5, fig. 69.

1976 *Siratus consuela* (A.H. Verrill) : RADWIN & D'ATTILIO, Murex Shells of the World : 106, pl. 17, fig. 13.

1982 *Siratus consuela* (A.H. Verrill) : ABBOTT & DANCE, Compendium of Seashells : 133.

1982 *Naquetia annandalei* (Preston) : ABBOTT & DANCE, Compendium of Seashells : 133 (misidentification).

Our general conclusions are thus :

a) *Murex trigonulus* Lamarck, 1822 (not 1816) is what CERNOHORSKY (1971) had figured as *Murex trigonulus* Lamarck, 1816, and is a synonym of *Chicoreus cumingii* A. Adams, 1853.

b) *Murex trigonulus* Lamarck, 1816, is most presumably a synonym of the true *Chicoreus triqueter* (Born, 1778).

c) As it is now already established, the *Murex trigonulus* of Reeve, not Lamarck (i.e. the "*Murex triqueter* Born" of Lamarck, 1816 and of Kiener, 1843, and also the "*M. triqueter* Born var. b" of Lamarck, 1822) is the Caribbean species *Chicoreus consuela* (Verrill, 1950).

ACKNOWLEDGMENTS

The authors are very grateful to Prof. Emily H. Vokes of Tulane University, New Orleans, for reviewing a late draft and to Dr. Solene Morris, British Museum of Natural History, for critical discussion on some aspects of this paper. We thank Ms. Kathie Way, British Museum of Natural History, for the loan of the types of *Murex cumingii* and *Murex*

roseotinctus, Mr. G. Dajoz, Muséum d'Histoire naturelle, Genève, who photographed the specimens and Mr. C. Weber, Muséum d'Histoire naturelle, Genève, for computer help in the text processing. We also thank Prof. B. Tursch, Université Libre de Bruxelles, and Dr. J. van Goethem, Institut royal des Sciences naturelles de Belgique, for reading and criticizing the manuscript.

Figure 1. *Murex trigonulus* Lamarck, 1822, lectotype (MHNG 1099/35/1), locality unknown, 37.4 mm, apertural and dorsal views.

Figure 2. *Murex trigonulus* Lamarck, 1822, paralectotype (MHNG 1099/35/2), locality unknown, 39 mm, apertural and dorsal views.

Figure 3. *Murex cumingii* A. Adams, 1853, lectotype (BMNH 1963.817), Philippine Islands, 58.1 mm, apertural and dorsal views.

Figure 4. *Murex trigonulus* Lamarck (Kiener, 1843), figured specimen pl. 25, fig. 2 (MHNG 987.102/1) (= *Chicoreustriqueter* (Born, 1778)), Indian Ocean, 64.4 mm, apertural and dorsal views.



1



2



3



4



Figure 5. *Murex trigonulus* Lamarck (Kiener, 1843), MHNG 987.102/2, (= *Chicoreus triqueter* (Born, 1778)), Indian Ocean, 62 mm, apertural and dorsal views.

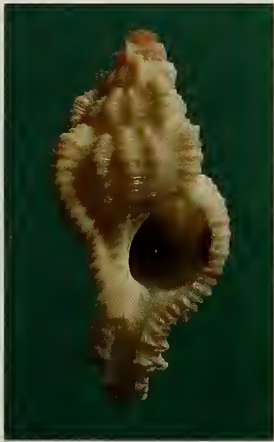
Figure 6. *Murex roseotinctus* Sowerby, 1860, holotype (BMNH 1974.100), Philippine Islands, 34 mm, apertural and dorsal views.

Figure 7. *Murex triqueter* Born (Kiener, 1843), figured specimen pl. 40, fig. 3 (MHNG 1152/41/1) (= *Chicoreus consuela* (Verrill, 1950)), "Océan indien" (erroneous locality), 40.5 mm, apertural and dorsal views.

Figure 8. *Murex triqueter* Born (Kiener, 1843), MHNG 1152/41/2, (= *Chicoreus consuela* (Verrill, 1950)), "Oc. indien" (erroneous locality), 47.2 mm, apertural and dorsal views.



5



6



7



8



Figure 9. *Chicoreus triqueter* (Born, 1778), Houart collection; Laing Island, Hansa bay, Papua New Guinea, 32.5 mm (young specimen), apertural and dorsal views.

Figure 10. *Chicoreus triqueter* (Born, 1778), MHNG 987.165 (Delessert coll.); Indian Ocean, 58.8 mm, apertural and dorsal views.

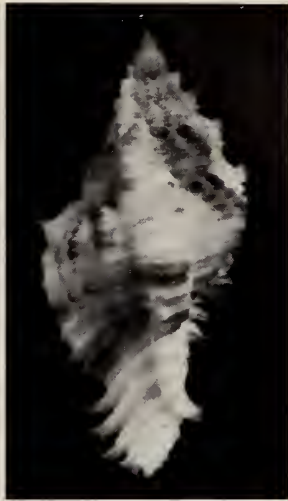
Figure 11. *Chicoreus triqueter* (Born, 1778), MHNG 984.193; Papua New Guinea, 47 mm, apertural and dorsal views.

Figure 12. *Chicoreus triqueter* (Born, 1778), MHNG 977.262; Philippine Islands, 37 mm, apertural and dorsal views.

Figure 13. *Murex trigonulus* Lamarck, 1816 (Encyclopédie méthodique, fig. 4 a & b).

Figure 14. *Murex triqueter* Born, 1778 (fig. 1038 of Martini, designated as lectotype by Vokes (1974)).

Figure 15. *Murex triqueter* Born (Lamarck, 1816) (Encyclopédie méthodique, fig. 1 a & b).



14

F. 7. a.



13

F. 7. b.



F. 1. a.



15

F. 1. b.



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